

IN THE CLAIMS

Please amend claims 50, 51, 60-63, 66-69, 74, 75, 77 and 78 as follows:

1-5 (Canceled)

6. (Previously amended) A method for producing a conditionally-immortalized dorsal root ganglion progenitor cell, comprising:

(a) transfecting dorsal root ganglion progenitor cells plated on a first surface and in a first growth medium that permit proliferation with DNA encoding a selectable marker and a regulatable oncogene; and

(b) passaging the transfected cells onto a second surface and in a second growth medium that permit attachment and proliferation; and therefrom producing a conditionally-immortalized dorsal root ganglion progenitor cell.

7. (Original) A method according to claim 6, wherein the dorsal root ganglion progenitor cells are rat cells.

8. (Original) A method according to claim 6, wherein the dorsal root ganglion progenitor cells are human cells.

GI 9. (Previously amended) A method according to claim 6 wherein the first and second surfaces are independently selected, and wherein the first and second surfaces comprise one or more substrates selected from the group consisting of a polyamino acid, fibronectin, laminin, collagen and tissue culture plastic.

10. (Previously amended) The method of claim 6 wherein the oncogene encodes a protein selected from the group consisting of v-myc, N-myc, c-myc, SV40 large T antigen, polyoma large T antigen, E1a protein of adenovirus, and E7 protein of human papillomavirus.

11. (Original) The method of claim 10 wherein the oncogene is v-myc.

12. (Previously amended) A conditionally-immortalized dorsal root ganglion progenitor cell containing an oncogene, wherein the cell differentiates into neurons upon inhibition of the expression of the oncogene.

13. (Previously amended) A cell according to claim 12, wherein the cell is a rat dorsal root ganglion progenitor cell transfected with an oncogene.

14. (Previously amended) A cell according to claim 12, wherein the cell is a human dorsal root ganglion progenitor cell transfected with an oncogene.

15. (Previously amended) A cell according to claim 12, wherein the cell differentiates into sensory neurons under appropriate culture conditions.

16. (Previously amended) A cell according to claim 12, wherein the cell differentiates into nociceptive sensory neurons under appropriate culture conditions.

17-46 (Canceled)

47. (Previously reinstated) A method for producing neurons, comprising culturing a cell produced according to claim 6 under conditions inhibiting expression of the regulatable oncogene.

48. (Previously reinstated) A method according to claim 47, wherein the ~~cells are conditionally-immortalized rat or human dorsal root ganglion progenitor cells, and~~ wherein the cells are cultured on a substrate in the presence of one or more differentiating agents.

49. (Previously reinstated) A neuron produced according to the method of claim 47.

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50. (Currently amended) A method for producing neurons, comprising culturing a cell ~~according to claim 12~~ under conditions inhibiting expression of the oncogene, wherein said cell is a conditionally-immortalized dorsal root ganglion progenitor cell containing an oncogene, and wherein said cell differentiates into neurons upon inhibition of the expression of the oncogene.

51. (Currently amended) A method according to claim 50, wherein the ~~eells are~~ cell is a conditionally-immortalized rat or human dorsal root ganglion progenitor ~~eells~~ cell, and wherein the ~~eells are~~ cell is cultured in the presence of one or more differentiating agents.

52. (Previously reinstated) A neuron produced according to the method of claim 50.

53. (Previously amended) A method for determining whether or not a conditionally-immortalized dorsal root ganglion progenitor cell is capable of differentiation into a neuron, comprising the steps of:

(a) detecting the presence or absence of β -III-tubulin expression in the cell in the proliferative growth condition; and

(b) if β -III-tubulin expression is detected, identifying said cell expressing β -III-tubulin as a conditionally-immortalized dorsal root ganglion progenitor cell that differentiates into neurons under cell culture conditions that allow conditionally-immortalized precursor cells to differentiate into neurons.

54. (Previously reinstated) A method for transplanting a conditionally-immortalized dorsal root ganglion progenitor cell into a mammal, comprising administering to a mammal a cell produced according to the method of claim 6.

55. (Previously reinstated) A method for transplanting a conditionally-immortalized dorsal root ganglion progenitor cell into a mammal, comprising administering to a mammal a cell according to claim 12.

56. (Previously reinstated) A method of treating a patient, comprising administering to a patient a cell produced according to the method of claim 6.

57. (Previously reinstated) A method of treating a patient, comprising administering to a patient a cell according to claim 12.

GI cont 58. (Previously reinstated) A method according to claim 57 wherein the patient is afflicted with chronic pain and/or a pathological condition characterized by neurodegeneration.

59. (Previously reinstated) A method according to claim 58 wherein the pathological condition is a neuropathy.

60. (Currently amended) A method of ~~screening for~~ identifying an agent that modulates the level or activity of a protein produced by a dorsal root ganglion cell, comprising:

(a) contacting a cell produced according to the method of claim 6 with a candidate agent; and

(b) ~~subsequently measuring the ability of the candidate agent to modulate the activity of a protein produced by the cell~~ comparing the level or activity of said protein in the presence of said agent with the level or activity of said protein in the absence of said agent,

wherein if said level or activity of said protein in the presence of said agent is different than the level or activity of said protein in the absence of said agent, said agent is

identified as an agent that modulates the level or activity of a protein produced by a dorsal root ganglion cell.

61. (Currently amended) A method for ~~screening for~~ identifying an agent that modulates the level or activity of a protein produced by a dorsal root ganglion cell, comprising:

(a) contacting a cell according to claim 12 with a candidate agent;
and

(b) ~~subsequently measuring the ability of the candidate agent to modulate the activity of a protein produced by the cell~~ comparing the level or activity of said protein in the presence of said agent with the level or activity of said protein in the absence of said agent,

wherein if said level or activity of said protein in the presence of said agent is different than the level or activity of said protein in the absence of said agent, said agent is identified as an agent that modulates the level or activity of a protein produced by a dorsal root ganglion cell.

62. (Currently amended) A method for detecting the presence or absence of a protein in a sample, comprising:

(a) contacting a sample with a cell produced according to the method of claim 6; and

(b) subsequently detecting a response or lack of response in the cell, ~~wherein said response is correlated with the presence of said protein,~~ wherein said response indicates the presence of said protein and said lack of response indicates the absence of the protein, and wherein said response is selected from the group consisting of a change in the level of an mRNA in said cell, a change in the level of a protein in said cell, and a change in the activity of a protein in said cell.

63. (Currently amended) A method for detecting the presence or absence of a protein in a sample, comprising:

(a) contacting a sample with a cell according to claim 12; and
(b) subsequently detecting a response or lack of response in the cell, ~~wherein said response is correlated with the presence of said protein,~~

wherein said response indicates the presence of said protein and said lack of response indicates the absence of the protein, and wherein said response is selected from the group consisting of a change in the level of an mRNA in said cell, a change in the level of a protein in said cell, and a change in the activity of a protein in said cell.

64. (Previously amended) A method of detecting a human dorsal root ganglion nucleic acid or protein, comprising detecting the presence of said nucleic acid or protein within a cell produced according to the method of claim 6.

65. (Previously amended) A method of detecting a human dorsal root ganglion nucleic acid or protein, comprising detecting the presence of said nucleic acid or protein within a cell according to claim 12:

66. (Currently amended) A method of identifying an agent that affects dorsal root ganglion cell death, comprising:

(a) contacting a cell produced according to the method of claim 6 with a candidate agent under conditions that, in the absence of the candidate agent, results in death of the cell; and

(b) subsequently ~~measuring the ability of the candidate agent to affect death by measuring cell death, and therefrom identifying an agent that affects dorsal root ganglion cell death~~ comparing the number of said plurality of cells that die in the presence of said agent to the number of said plurality of cells that die in the absence of said agent,

wherein if said number of said plurality of cells that die in the presence of said agent is different than said number that die in the absence of said agent, said agent is identified as an agent that affects dorsal root ganglion cell death.

67. (Currently amended) A method for screening for an agent that affects dorsal root ganglion cell death, comprising:

(a) contacting a plurality of cells according to claim 12 with a candidate agent under conditions that, in the absence of the candidate agent, results in death of the cell; and

(b) subsequently ~~measuring the ability of the candidate agent to affect death by measuring cell death, and therefrom identifying an agent that affects dorsal root ganglion cell death~~ comparing the number of said plurality of cells that die

in the presence of said agent to the number of said plurality of cells that die in the absence of said agent,

wherein if said number of said plurality of cells that die in the presence of said agent is different than said number that die in the absence of said agent, said agent is identified as an agent that affects dorsal root ganglion cell death.

68. (Currently amended) A method for screening for a protein that regulates dorsal root ganglion cell death, comprising:

(a) altering the level of expression of a protein within a plurality of cell cells produced according to the method of claim 6; and

(b) comparing the number of said plurality of cells that die when said level of expression is altered to the number of said plurality of cells that die when said level of expression is not altered,

wherein if said number of said plurality of cells that die when said level of expression is altered is different than said number that die when said level of expression is not altered, said agent is identified as an agent that affects dorsal root ganglion cell death.

69. (Currently amended) A method for screening for a protein that regulates dorsal root ganglion cell death, comprising:

(a) altering the level of expression of a protein within a plurality of cell cells according to claim 12; and

(b) comparing the number of said plurality of cells that die when said level of expression is altered to the number of said plurality of cells that die when said level of expression is not altered,

wherein if said number of said plurality of cells that die when said level of expression is altered is different than said number that die when said level of expression is not altered, said agent is identified as an agent that affects dorsal root ganglion cell death.

70. (Previously added) A method for transplanting a dorsal root ganglion cell into a mammal, comprising administering to a mammal a cell produced according to the method of claim 47.

71. (Previously added) A method of treating a patient, comprising administering to a patient a cell produced according to the method of claim 47.

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72. (Previously added) A method according to claim 71 wherein the patient is afflicted with chronic pain and/or a pathological condition characterized by neurodegeneration.

73. (Previously added) A method according to claim 72 wherein the pathological condition is a neuropathy.

74. (Currently amended) A method for ~~screening for~~ identifying an agent that modulates the level or activity of a protein produced by a dorsal root ganglion cell, comprising:

(a) contacting a cell produced according to the method of claim 47 ~~with a candidate agent; and~~

(b) ~~subsequently measuring the ability of the candidate agent to modulate the activity of a protein produced by the cell~~ comparing the level or activity of said protein in the presence of said agent with the level or activity of said protein in the absence of said agent,

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wherein if said level or activity of said protein in the presence of said agent is different than the level or activity of said protein in the absence of said agent, said agent is identified as an agent that modulates the level or activity of a protein produced by a dorsal root ganglion cell.

75. (Currently amended) A method for detecting the presence or absence of a protein in a sample, comprising:

(a) contacting a sample with a cell produced according to the method of claim 47; and

(b) subsequently detecting a response or lack of response in the cell, ~~wherein said response is correlated with the presence of said protein,~~ wherein a response indicates the presence of said protein and said lack of response indicates the absence of the protein, and wherein said response is selected from the group consisting of a change in the level of an mRNA in said cell, a change in the level of a protein in said cell, and a change in the activity of a protein in said cell.

76. (Previously added) A method of detecting a human dorsal root ganglion gene or protein, comprising detecting the presence of a gene or protein within a culture of cells produced according to the method of claim 47.

77. (Currently amended) A method for screening for an agent that affects dorsal root ganglion cell death, comprising:

(a) contacting a plurality of cells produced according to the method of claim 47 with a candidate agent under conditions that, in the absence of the candidate agent, results in death of the cell; and

(b) ~~subsequently measuring the ability of the candidate agent to affect death by measuring cell death, and therefrom identifying an agent that affects dorsal root ganglion cell death~~ comparing the number of said plurality of cells that die in the presence of said agent to the number of said plurality of cells that die in the absence of said agent,

wherein if said number of said plurality of cells that die in the presence of said agent is different than said number that die in the absence of said agent, said agent is identified as an agent that affects dorsal root ganglion cell death.

78. (Currently amended) A method for screening for a protein that regulates dorsal root ganglion cell death, comprising:

(a) altering the level of expression of a protein within a plurality of cell cells produced according to the method of claim 47; and

(b) comparing the number of said plurality of cells that die when said level of expression is altered to the number of said plurality of cells that die when said level of expression is not altered,

wherein if said number of said plurality of cells that die when said level of expression is altered is different than said number that die when said level of expression is not altered, said agent is identified as an agent that affects dorsal root ganglion cell death.